

<b>Site Name: Westlake Landfill</b>		<b>Site Contact: David Kinroth</b>		<b>Telephone: 913-220-5887 (cell)</b>													
<b>Location: Bridgeton, Missouri</b>		<b>Client Contact: James Johnson (OSC)</b>		<b>Telephone: 816-516-4954 (cell) 913-551-7058 (work)</b>													
<b>EPA ID No.</b>		<b>Prepared By: Rick Claytor</b>		<b>Date Prepared: 4/15/2014</b>													
<b>Project No. 9025.14.0058.000</b>		<b>Dates of Activities: April 28, 2014 and forward</b>		<b>Emergency Response</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No													
<b>Objectives:</b> START will provide support to EPA Region 7 implementing an air monitoring plan to sample for landfill constituents prior to the isolation barrier installation around the Westlake landfill. The plan is to document background conditions off the site prior to construction activities and during construction activities to determine if any releases are occurring above health based benchmarks. The monitoring will be conducted until the barrier installation is completed.		<b>Site Type: Check as many as applicable.</b> <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Active</td> <td><input checked="" type="checkbox"/> Landfill</td> <td><input type="checkbox"/> Inner-City</td> </tr> <tr> <td><input type="checkbox"/> Inactive</td> <td><input type="checkbox"/> Railroad</td> <td><input type="checkbox"/> Rural</td> </tr> <tr> <td><input checked="" type="checkbox"/> Secured</td> <td><input checked="" type="checkbox"/> Residential</td> <td><input type="checkbox"/> Remote</td> </tr> <tr> <td><input type="checkbox"/> Unsecured</td> <td><input checked="" type="checkbox"/> Industrial</td> <td><input type="checkbox"/> Other (<i>specify</i>)</td> </tr> </table>				<input checked="" type="checkbox"/> Active	<input checked="" type="checkbox"/> Landfill	<input type="checkbox"/> Inner-City	<input type="checkbox"/> Inactive	<input type="checkbox"/> Railroad	<input type="checkbox"/> Rural	<input checked="" type="checkbox"/> Secured	<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Remote	<input type="checkbox"/> Unsecured	<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Other ( <i>specify</i> )
<input checked="" type="checkbox"/> Active	<input checked="" type="checkbox"/> Landfill	<input type="checkbox"/> Inner-City															
<input type="checkbox"/> Inactive	<input type="checkbox"/> Railroad	<input type="checkbox"/> Rural															
<input checked="" type="checkbox"/> Secured	<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Remote															
<input type="checkbox"/> Unsecured	<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Other ( <i>specify</i> )															
<b>Project Scope of Work and Site Background</b> The potential hazardous releases into the air around an ongoing subsurface smoldering event at the Westlake Landfill in Bridgeton, Missouri will be monitored before during and after the barrier installation.  Up to 5 monitoring locations surrounding the site in addition to on-site monitoring. We plan to sample for typical solid waste landfill gases such as sulfur dioxide (SO <sub>2</sub> ), hydrogen sulfide (H <sub>2</sub> S), carbon monoxide (CO) and volatile organic compounds (VOCs). Radiation monitoring for radon, alpha, beta and gamma emissions will also be conducted.																	
<b>Health and Safety Approver Comments or Additional Instructions:</b> This HASP SHALL be revised at each site visit as appropriate to ensure that the hazards associated with the assigned tasks have been identified and proper safety controls implemented. All information provided in this HASP (and any applicable attachments) have been reviewed and made site-specific by proper hazard identification and control techniques. This method of risk assessment is done in the field at the time of work being conducted. Changes to this HASP (or AHA) shall be documented and approved by a safety manager.																	
<b>Health and Safety Plan Approver Signature:</b>				<b>Date:</b>													

**Note: A minimum of two persons with appropriate training and medical surveillance must be on site for any fieldwork subject to Level 2 HASP requirements.**

**Note: A detailed site sketch or figure may be included on Page 10 of 12.**

**Initial Isolation and Protective Action Distances (for emergency response operations only):** Use the 2012 Emergency Response Guidebook (ERG) as appropriate

**Initial Isolation Distance:** This zone should extend in all directions; 660 feet for unknown hazards and 0.5 mile for tanker truck or rail car incidents.

NOTE: Keep a maximum distance away for unknown sites until the identity of the materials is determined.

**Subsequent Isolation and Protection Action Zones Based on Air Monitoring Results:**

NOTE: Distance at sites with unknown hazards should be increased, if necessary, based on air monitoring results.

Wind Speed and Direction (Approach from upwind)		Temperature (°F)	Relative Humidity (%)	Probability of Precipitation (%)	Weather Forecast (such as partly cloudy, snow, etc.)
Speed (mph):	From Direction:	A current weather forecast shall be attached to this HASP during all field activities.			
<b>On-Site Supplies:</b> <input checked="" type="checkbox"/> First Aid Kit <input checked="" type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Air Horn <input type="checkbox"/> Oral Thermometer <input type="checkbox"/> Noise Dosimeter					
<b>Known or Anticipated Site Hazards or Concerns:</b> (Hazards covered by existing Safe Work Practices are listed on the next page)					
<input type="checkbox"/> Work on active roadway	<input type="checkbox"/> Overhead utilities	<input type="checkbox"/> Energized electrical systems			
<input type="checkbox"/> Onsite laboratory	<input type="checkbox"/> Buried Utilities	<input type="checkbox"/> Portable hand tool use			
<input type="checkbox"/> Explosion or fire hazard	<input type="checkbox"/> Surface or underground storage tanks	<input type="checkbox"/> Portable electrical tool use			
<input type="checkbox"/> Oxygen deficiency	<input checked="" type="checkbox"/> General slips, trips, falls	<input type="checkbox"/> Machine guarding			
<input type="checkbox"/> Unknown or poorly characterized chemical hazards	<input type="checkbox"/> Uneven, muddy, rugged terrain	<input checked="" type="checkbox"/> Portable fire extinguisher use			
<input checked="" type="checkbox"/> Inorganic chemicals	<input type="checkbox"/> Lift (man lift, cherry picker) use	<input type="checkbox"/> Driving commercial vehicles			
<input checked="" type="checkbox"/> Organic chemicals	<input type="checkbox"/> Industrial truck (forklift) use	<input type="checkbox"/> Driving personal vehicles			
<input type="checkbox"/> Chemical warfare materiel	<input type="checkbox"/> Wood or metal ladder use	<input type="checkbox"/> Scientific diving operations			
<input type="checkbox"/> Compressed Gas Cylinders	<input type="checkbox"/> Dangerous goods shipped by air	<input type="checkbox"/> Injury and Illness Prevention Program (California only)			
<input type="checkbox"/> Asbestos	<input checked="" type="checkbox"/> Elevated work (over 6' high) ( <b>work on roof with permanent fall barrier</b> )	<input type="checkbox"/> Ergonomics (California only)			
<input type="checkbox"/> Respirable particulates	<input type="checkbox"/> Heavy equipment use or operation	<input type="checkbox"/> Work in strip or shaft mines			
<input type="checkbox"/> Respirable silica	<input type="checkbox"/> Construction work	<input type="checkbox"/> Client-specific safety requirements (attach to HASP)			
<input type="checkbox"/> Blasting and explosives	<input type="checkbox"/> Excavation or trenching	<input type="checkbox"/> ATV use			
<input type="checkbox"/> Non-ionizing radiation (lasers, radiofrequencies, UV)	<input type="checkbox"/> Benching, shoring, bracing	<input type="checkbox"/> Methamphetamine lab			
<input checked="" type="checkbox"/> Ionizing radiation (alpha, beta, gamma, etc.)	<input type="checkbox"/> Scaffold use	<input type="checkbox"/> Working over or near water			
<input checked="" type="checkbox"/> Heat stress	<input type="checkbox"/> High noise	<input type="checkbox"/> Mold			
<input checked="" type="checkbox"/> Cold stress	<input type="checkbox"/> Grinding operations	<input type="checkbox"/> Other (insert)			
<b>Explosion or Fire Potential:</b> <input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low <input type="checkbox"/> Unknown					

**Chemical Products Tetra Tech EM Inc. Will Use or Store On Site:** (Attach a Material Safety Data Sheet [MSDS] for each item.)

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> Alconox or Liquinox             | <input type="checkbox"/> Calibration gas (Methane)                  | <input type="checkbox"/> Hydrogen gas                                    | <input type="checkbox"/> Isopropyl alcohol                    |
| <input type="checkbox"/> Hydrochloric acid (HCl)         | <input checked="" type="checkbox"/> Calibration gas (Isobutylene)   | <input type="checkbox"/> Household bleach (NaOCl)                        | <input type="checkbox"/> HazCat Kit                           |
| <input type="checkbox"/> Nitric acid (HNO <sub>3</sub> ) | <input type="checkbox"/> Calibration gas (Pentane)                  | <input type="checkbox"/> Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> ) | <input type="checkbox"/> Mark I Kits ( <i>number?</i> ) _____ |
| <input type="checkbox"/> Sodium hydroxide (NaOH)         | <input checked="" type="checkbox"/> Calibration gas (4-gas mixture) | <input type="checkbox"/> Hexane  | <input type="checkbox"/> Other ( <i>specify</i> ) _____       |

**WARNING: Eyewash solution shall be readily available on ALL projects where corrosives (acids or bases) are used, including sample preservatives**

**Applicable Safety Programs and Safe Work Practices (SWP). Attach to HASP:**

- ☐ DCN 4-03 Demolition and Decontamination
- ☐ DCN 4-05 Trenching and Excavation Safety
- ☐ DCN 4-08 Asbestos Protection Program
- ☐ DCN 4-09 Haulage and Earth Moving
- ☐ DCN 4-10 Lead Protection Program
- ☒ SWP DCN 5-01 General Safe Work Practices
- ☒ SWP DCN 5-02 General Safe Work Practices HAZWOPER
- ☐ SWP DCN 5-03 Safe Work Practices for Office Employees
- ☐ SWP DCN 5-04 Safe Drilling Practices
- ☐ SWP DCN 5-05 Safe Direct Push (GeoProbe) Practices
- ☐ SWP DCN 5-06 Working Over or Near Water
- ☐ SWP DCN 5-07 Use of Heavy Equipment
- ☐ SWP DCN 5-08 Special Site Hazards (Firearms, Remote Sites, Mines, aircraft, etc.)
- ☐ SWP DCN 5-09 Safe Electrical Work Practices
- ☒ SWP DCN 5-10 Fall Protection Practices
- ☒ SWP DCN 5-11 Portable Ladder Safety
- ☐ SWP DCN 5-12 Drum and Container Handling Practices
- ☐ SWP DCN 5-13 Flammable Hazards and Ignition Sources
- ☐ SWP DCN 5-14 Spill and Discharge Control Practices
- ☒ SWP DCN 5-15 Heat Stress
- ☒ SWP DCN 5-16 Cold Stress
- ☐ SWP DCN 5-17 Biohazards
- ☐ SWP DCN 5-18 Underground Storage Tank Removal Practices
- ☐ SWP DCN 5-19 Safe Lifting Procedures
- ☐ SWP DCN 5-22 Hydrographic Data Collection
- ☐ SWP DCN 5-23 Permit-Required Confined Space Entry Practices
- ☐ SWP DCN 5-24 Non-Permit-Required Confined Space Entry Practices
- ☒ SWP DCN 5-26 Prevention of Sun Exposure
- ☐ SWP DCN 5-27 Respirator Cleaning Practices
- ☐ SWP DCN 5-28 Safe Use Practices for Use of Respirators
- ☐ SWP DCN 5-29 Respirator Qualitative Fit Testing Procedures
- ☐ SWP DCN 5-30 Laboratory Soil Testing Safe Work Practices

**Tasks Performed At Job Site that are NOT Covered by SWPs**

**NOTE:** Many AHA's can be found on the Health & Safety intranet site at:  
<http://home.ttemi.com/C18/Activity%20Hazard%20Analysis%20Docum/default.aspx>

*Attach Activity Hazard Analysis (AHA) for each non-covered task*

- ☒ outdoor ambient air
- ☐ (non-covered task)
- ☐ (non-covered task)
- ☐ (non-covered task)
- ☐ (non-covered task)

**Tetra Tech Employee Training and Medical Requirements:**
**Basic Training and Medical**

- ☒ Initial 40 Hour Training
- ☒ 8-Hour Supervisor Training (one-time)
- ☒ Current 8-Hour Refresher Training
- ☒ Current Medical Clearance (including respirator use)
- ☒ Current First Aid Training
- ☒ Current CPR Training
- ☐ Current Respirator Fit-Test

**Other Specific Training and Medical Surveillance Requirements**

- ☐ Confined Space Training
- ☐ Level A Training
- ☐ Radiation Training
- ☐ OSHA 10-hour Construction Safety Training
- ☐ OSHA 30-hour Construction Safety Training
- ☐ Asbestos Awareness Training
- ☐ Asbestos B-Reader X-Ray
- ☐ Blood Lead Level and ZPP Pre, during and Post-Project
- ☐ Urinary Arsenic Level Pre and Post-Project
- ☐ Other \_\_\_\_\_
- ☐ Other \_\_\_\_\_

Materials Present or Suspected at Site	Highest Observed Concentration (specify units and sample medium)	Exposure Limit (specify ppm or mg/m <sup>3</sup> )	IDLH Level (specify ppm or mg/m <sup>3</sup> )	Primary Hazards of the Material (explosive, flammable, corrosive, toxic, volatile, radioactive, biohazard, oxidizer, or other)	Symptoms and Effects of Acute Exposure	Photoionization Potential (eV)
sulfur dioxide (SO <sub>2</sub> )	U	PEL = 15 mg/m <sup>3</sup> REL = .10 mg/m <sup>3</sup> TLV =	100 mg/m <sup>3</sup>	toxic	Irritation eyes, nose throat, \; rhin; chocking, cough; reflex bronchionstriction	12.3
hydrogen sulfide (H <sub>2</sub> S),	U	PEL = 20 ppm REL = 15 mg/m <sup>3</sup> TLV =	100 ppm	Toxic, flammable	Irrit eyes, resp sys; apnea, coma, convuls; corn visic; dizz, head, f tg, irrit, insom, derm	NA
carbon monoxide (CO)	U	PEL = 55 mg/m <sup>3</sup> REL = 40 mg/m <sup>3</sup> TLV = NA	1200 ppm	Flammable, toxic	head, tachypnea, nau, weak, blurred vision, dizziness, slurred speech, confusion, convulsions	14.01
radon, alpha, beta and gamma	No readings above naturally occurring background levels	PEL = REL = TLV =		radioactive		NA
Non-specified volatile organic compounds	U	PEL = Various REL = TLV =	Various	Volatile, flammable	Various, but include nausea, headache, and vomiting.	Various
		PEL = REL = TLV =				

**Specify Information Sources:** For example: NIOSH Pocket Guide to Hazardous Chemicals, September 2005 and American Conference of Governmental Industrial Hygienists (ACGIH). "Threshold Limit Values and Biological Exposure Indices for 2009."

**Note: In the Exposure Limit column, include Ceiling (C) and Short-Term Exposure Limits (STEL) if they are available. Also, use the following short forms and abbreviations to complete the table above.**

A = Air  
CARC = Carcinogenic  
eV = Electron volt  
U = Unknown

IDLH = Immediately dangerous to life or health  
mg/m<sup>3</sup> = Milligram per cubic meter  
NA = Not available  
NE = None established

PEL = Permissible exposure limit  
ppm = Part per million  
REL = Recommended exposure limit  
S = Soil

TLV = Threshold limit value

**Note: If no contingency level of protection is selected, all employees covered under this plan must evacuate the immediate site area if air contaminant levels require upgrading PPE. Level A field work requires a Level 3 HASP. This information is available on the chemical hazards page of this HASP.**

**Field Activities Covered Under this HASP:**

Task Description	Level of Protection <sup>1</sup>		Date of Activities
	Primary	Contingency	
1 Ambient air monitoring	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	April 25 forward
2	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
3	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
4	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
5	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	

**Site Personnel and Responsibilities (include subcontractors):**

Employee Name and Office Code / Location	Task(s)	Responsibilities
David Kinroth, Project Manager	1	<ul style="list-style-type: none"> <li>Project Manager: Manages the overall project, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with client as necessary. Additionally, For projects lasting longer than one consecutive week on-site, the PM is responsible for conducting one field audit using Form AF-1.</li> </ul>
Rob Monnig	1	<ul style="list-style-type: none"> <li>Field Team Leader: Directs field activities, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with the Project Manager and the client as necessary</li> </ul>
Greg Blattner, SCC	1	<ul style="list-style-type: none"> <li>Site Safety Coordinator (SSC): Ensures that appropriate personal protective equipment (PPE) is available, enforces proper use of PPE by on-site personnel and subcontractors; suspends investigative work if personnel are or may be exposed to an immediate health hazard; implements and enforces the HASP; identifies and controls site hazards when possible; communicates site hazards to all personnel; and reports any deviations observed from anticipated conditions described in the health and safety plan to the health and safety representative.</li> <li>Alternate Site Safety Coordinator (if any)</li> <li>Field Personnel: Completes tasks as directed by the project manager, field team leader, and SSC, and follows the HASP and all SWPs and guidelines established in the Tetra Tech, Inc., Health and Safety Manual.</li> <li>Tetra Tech-hired subcontractor personnel on site (a subcontract SSC MUST be identified by name): Completes tasks as outlined in the project scope of work in accordance with the contract. Participates in all Tetra Tech on-site safety meetings and follows all procedures and guidelines established in this HASP, as well as the company health and safety plan and program.</li> </ul>

Note:

- See next page for details on levels of protection

**NOTE: Contingency level of protection section should be completed only if the upgraded level of protection is immediately available at the job site. If no contingency level of protection is denoted, all employees covered under this HASP must evacuate the immediate site area if air contaminant levels would require an upgrade of PPE.**

**Protective Equipment: (Indicate type or material as necessary for each task.)**

<b>Tas k</b>	<b>Primary Level of Protection (A,B,C,D)</b>	<b>PPE Component Description (Primary)</b>	<b>Contingency Level of Protection (A, B, C, D)</b>	<b>PPE Component Description (Contingency)</b>
1	D	Respirator type: NA Cartridge type (if applicable): NA CPC material: NA Glove material(s): Jersey & nitrile Boot material: Steel toe and shank Other: Safety glasses, hard hat, safety vest	C	Respirator type: Full-face APR Cartridge type (if applicable): Organic vapors, P100 CPC material: Tyvek coveralls Glove material(s): Nitrile Boot material: Steel toe and shank Other: hard hat, safety vest
2		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:
3		Respirator type: NA Cartridge type (if applicable): CPC material: NA Glove material(s): Boot material: Other:		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:
4		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:
5		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:

**Respirator Notes:**

Respirator cartridges may only be used for a maximum time of 8 hours or one work shift, whichever is less, and must be discarded at that time. For job sites with organic vapors, respirator cartridges may be used as described in this note as long as the concentration is less than 200 parts per million (ppm), the boiling point is greater than 70 °Celsius, and the relative humidity is less than 85 percent. If any of these levels are exceeded, a site-specific respirator cartridge change-out schedule must be developed and included in the HASP using Tetra Tech Form RP-2 (Respiratory Hazard Assessment Form)

**Notes:**

All levels of protection must include eye, head, and foot protection.

CPC = Chemical protective clothing

Thermoluminescent Dosimeter (TLD) Badges must be worn during all field activities on sites with radiation hazards. TLDs must be worn under CPC.

Monitoring Equipment: All monitoring equipment on site must be calibrated before and after each use and results recorded in the site logbook				
Instrument (Check all required)	Task	Instrument Reading	Action Guideline	Comments
<input type="checkbox"/> Combustible gas indicator model:	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	0 to 10% LEL	Monitor; evacuate if confined space	
		10 to 25% LEL	Potential explosion hazard; notify SSC	
		>25% LEL	Explosion hazard; interrupt task; evacuate site; notify SSC	
<input type="checkbox"/> Oxygen meter model:	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	>23.5% Oxygen	Potential fire hazard; evacuate site	
		23.5 to 19.5% Oxygen	Oxygen level normal	
		<19.5% Oxygen	Oxygen deficiency; interrupt task; evacuate site; notify SSC	
<input checked="" type="checkbox"/> Radiation survey meter model: TLDs, Alpha Track Detectors, Particulate monitors (Radecos), E-Perms (Radon), and Saphymo Genitron Gamma Tracers,	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Normal background	Proceed	Annual exposure not to exceed 1,250 mrem per quarter  Background reading must be taken in an area known to be free of radiation sources.
		Two to three times background	Notify SSC	
		>Three times background	Radiological hazard; interrupt task; evacuate site; notify RSO	
<input checked="" type="checkbox"/> Photoionization detector model: <input type="checkbox"/> 11.7 eV <input checked="" type="checkbox"/> 10.6 eV <input type="checkbox"/> 10.2 eV <input type="checkbox"/> 9.8 eV <input type="checkbox"/> Other (specify): _____	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Any response above background to 5 ppm above background	Level B is recommended Level C <sup>a</sup> may be acceptable	These action levels are for unknown gases or vapors. After the contaminants are identified, action levels should be based on the specific contaminants involved.
		> 5 to 500 ppm above background	Level B	
		> 500 ppm above background	Level A	
<input type="checkbox"/> Flame ionization detector model:	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Any response above background to 5 ppm above background	Level B is recommended Level C <sup>a</sup> may be acceptable	These action levels are for unknown gases or vapors. After the contaminants are identified, action levels should be based on the specific contaminants involved.
		>5 to 500 ppm above background	Level B	
		>500 above background	Level A	
<input type="checkbox"/> Detector tube models:	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Specify: < 1/2 the PEL > 1/2 the PEL	Specify:	The action level for upgrading the level of protection is one-half of the contaminant's PEL. If the PEL is reached, evacuate the site and notify a safety specialist
<input checked="" type="checkbox"/> Other (specify): MultiRae / AreaRae / PbRae	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Specify: CO – 9ppm SO <sub>2</sub> – Day: 0.10 ppm Night: 0.40 ppm H <sub>2</sub> S – Day: 0.30 ppm Night: 1.00 ppm VOC – Day: 5.0 ppm Night: 10.0 ppm	Specify: Alarm levels: additional monitoring will be conducted to determine if additional actions are required.	

Notes:

eV= electron volt

LEL=Lower explosive limit

mrem=Millirem

PEL=Permissible exposure limit

ppm=Part per million

a. Level B is required when chemical hazards are present, but are uncharacterized. Level C may be acceptable for certain tasks in some situations. If you are uncertain, consult your RSO.

Project-Specific Industrial Hygiene Requirements	Emergency Contacts: <span style="float: right;">Telephone No.</span>																																
<b>OSHA-Regulated Chemicals*:</b> <i>Check any present on the job site in any medium (air, water, soil)</i> <ul style="list-style-type: none"> <li><input type="checkbox"/> No chemicals below are located on the job site</li> <li><input type="checkbox"/> Friable Asbestos</li> <li><input type="checkbox"/> Silica, crystalline</li> <li><input type="checkbox"/> alpha-Naphthylamine</li> <li><input type="checkbox"/> Methyl chloromethyl ether</li> <li><input type="checkbox"/> 3,3'-Dichlorobenzidine (and its salts)</li> <li><input type="checkbox"/> bis-Chloromethyl ether</li> <li><input type="checkbox"/> beta-Naphthylamine</li> <li><input type="checkbox"/> Benzidine</li> <li><input type="checkbox"/> 4-Aminodiphenyl</li> <li><input type="checkbox"/> Ethyleneimine</li> <li><input type="checkbox"/> beta-Propiolactone</li> <li><input type="checkbox"/> 2-Acetylaminofluorene</li> <li><input type="checkbox"/> 4-Dimethylaminoazobenzene</li> <li><input type="checkbox"/> N-nitrosomethylamine</li> <li><input type="checkbox"/> Vinyl chloride</li> <li><input type="checkbox"/> Inorganic arsenic</li> <li><input type="checkbox"/> Lead</li> <li><input type="checkbox"/> Chromium (VI)</li> <li><input type="checkbox"/> Cadmium</li> <li><input type="checkbox"/> Benzene</li> <li><input type="checkbox"/> Coke oven emissions</li> <li><input type="checkbox"/> 1,2-Dibromo-3-chloropropane</li> <li><input type="checkbox"/> Acrylonitrile</li> <li><input type="checkbox"/> Ethylene oxide</li> <li><input type="checkbox"/> Formaldehyde</li> <li><input type="checkbox"/> Methylenedianiline</li> <li><input type="checkbox"/> 1,3-Butadiene</li> <li><input type="checkbox"/> Methylene chloride</li> </ul> <p>* NOTE: Many states, including California and New Jersey, have chemical-specific worker protection requirements and standards for many chemicals and known or suspected carcinogens.</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WorkCare and Incident Intervention</td> <td style="width: 30%; text-align: right;">888.449.7787, or 800.455.6155</td> </tr> <tr> <td>Tetra Tech EMI 24-hour Anonymous Hazard Reporting Line</td> <td style="text-align: right;">866.383.8070</td> </tr> <tr> <td>U.S. Coast Guard National Response Center</td> <td style="text-align: right;">800.424.8802</td> </tr> <tr> <td>InfoTrac</td> <td style="text-align: right;">800.535.5053</td> </tr> <tr> <td>Poison Control</td> <td style="text-align: right;">800.222.1222</td> </tr> <tr> <td>Fire department</td> <td style="text-align: right;">911 (417) 623-0403</td> </tr> <tr> <td>Police department</td> <td style="text-align: right;">911 (417) 623-3131</td> </tr> </table> <p><b>Personnel Call-Down List:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Job Title or Position:</th> <th style="width: 30%;">Name</th> <th style="width: 30%;">Cell Phone:</th> </tr> </thead> <tbody> <tr> <td>Regional Safety Officer</td> <td>Denny Cox</td> <td style="text-align: right;">(816) 668-7464</td> </tr> <tr> <td>Project Manager:</td> <td>David Kinroth</td> <td style="text-align: right;">(314) 517-6798</td> </tr> <tr> <td>Field Team Leader:</td> <td></td> <td></td> </tr> <tr> <td>Site Safety Coordinator (SSC):</td> <td></td> <td></td> </tr> <tr> <td>Subcontractor SSC:</td> <td></td> <td></td> </tr> </tbody> </table>	WorkCare and Incident Intervention	888.449.7787, or 800.455.6155	Tetra Tech EMI 24-hour Anonymous Hazard Reporting Line	866.383.8070	U.S. Coast Guard National Response Center	800.424.8802	InfoTrac	800.535.5053	Poison Control	800.222.1222	Fire department	911 (417) 623-0403	Police department	911 (417) 623-3131	Job Title or Position:	Name	Cell Phone:	Regional Safety Officer	Denny Cox	(816) 668-7464	Project Manager:	David Kinroth	(314) 517-6798	Field Team Leader:			Site Safety Coordinator (SSC):			Subcontractor SSC:		
WorkCare and Incident Intervention	888.449.7787, or 800.455.6155																																
Tetra Tech EMI 24-hour Anonymous Hazard Reporting Line	866.383.8070																																
U.S. Coast Guard National Response Center	800.424.8802																																
InfoTrac	800.535.5053																																
Poison Control	800.222.1222																																
Fire department	911 (417) 623-0403																																
Police department	911 (417) 623-3131																																
Job Title or Position:	Name	Cell Phone:																															
Regional Safety Officer	Denny Cox	(816) 668-7464																															
Project Manager:	David Kinroth	(314) 517-6798																															
Field Team Leader:																																	
Site Safety Coordinator (SSC):																																	
Subcontractor SSC:																																	
	<p><b>Medical and Site Emergencies:</b></p> <p>Signal a site or medical emergency with three blasts of a loud horn (car horn, fog horn, or similar device). Site personnel should evacuate to the area of safe refuge designated on the site map.</p> <p>Hospital Name: SSM DePaul Health Center</p> <p>Address: 12303 DePaul Drive, Bridgeton, MO 63044</p> <p>General Phone: (314) 344-6000</p> <p>Emergency Phone: 911</p> <p>Ambulance Phone: 911</p> <p>Hospital called to verify emergency services are offered? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>Step-by-step Route to Hospital: (see Page 11 of 12 for route map)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">1. Head southwest on Taussig Rd toward St Charles Rock Rd</td> <td style="width: 20%; text-align: right;">0.2 mi</td> </tr> <tr> <td>2. Turn left onto St Charles Rock Rd</td> <td style="text-align: right;">1.3 mi</td> </tr> <tr> <td>3. Turn right onto De Paul Dr</td> <td style="text-align: right;">289 ft</td> </tr> <tr> <td>4. Turn right to stay on De Paul Dr</td> <td style="text-align: right;">0.1 mi</td> </tr> <tr> <td>5. Turn left to stay on De Paul Dr</td> <td style="text-align: right;">0.2 mi</td> </tr> <tr> <td>6. Turn right to stay on De Paul Dr Destination will be on the right</td> <td style="text-align: right;">423 ft</td> </tr> </table>	1. Head southwest on Taussig Rd toward St Charles Rock Rd	0.2 mi	2. Turn left onto St Charles Rock Rd	1.3 mi	3. Turn right onto De Paul Dr	289 ft	4. Turn right to stay on De Paul Dr	0.1 mi	5. Turn left to stay on De Paul Dr	0.2 mi	6. Turn right to stay on De Paul Dr Destination will be on the right	423 ft																				
1. Head southwest on Taussig Rd toward St Charles Rock Rd	0.2 mi																																
2. Turn left onto St Charles Rock Rd	1.3 mi																																
3. Turn right onto De Paul Dr	289 ft																																
4. Turn right to stay on De Paul Dr	0.1 mi																																
5. Turn left to stay on De Paul Dr	0.2 mi																																
6. Turn right to stay on De Paul Dr Destination will be on the right	423 ft																																

**Note: This page must be posted on site.**





<b>Decontamination Procedures</b>		<b>Emergency Response Planning</b>
<p>The site safety coordinator oversees implementation of project decontamination procedures and is responsible for ensuring they are effective.</p>		<p>During the pre-work briefing and daily tailgate safety meetings, all on-site employees will be trained in the provisions of emergency response planning, site communication systems, and site evacuation routes.</p>
<p><b>Personnel Decontamination</b></p> <p>Level D Decon - <input type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry</p> <p>Level C Decon - <input type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry</p> <p>Level B Decon – Briefly outline the level B decontamination methods to be used on a separate page attached to this HASP.</p> <p>Level A Decon – A Level 3 HASP is required. Notify your regional health and safety representative and health and safety director.</p>	<p><b>Decontamination Equipment</b></p> <p><input type="checkbox"/> Washtubs</p> <p><input checked="" type="checkbox"/> Buckets</p> <p><input checked="" type="checkbox"/> Scrub brushes</p> <p><input checked="" type="checkbox"/> Pressurized sprayer</p> <p><input checked="" type="checkbox"/> Detergent [Alconox]</p> <p><input type="checkbox"/> Solvent [Type]</p> <p><input type="checkbox"/> Household bleach solution</p> <p style="padding-left: 20px;">Concentration/Dilution: _____</p> <p><input checked="" type="checkbox"/> Deionized water</p> <p><input type="checkbox"/> Disposable sanitizer wipes</p> <p><input type="checkbox"/> Facemask sanitizer powder</p> <p><input type="checkbox"/> Wire brush</p> <p><input checked="" type="checkbox"/> Spray bottle</p> <p><input type="checkbox"/> Tubs / pools</p> <p><input type="checkbox"/> Banner/barrier tape</p> <p><input type="checkbox"/> Plastic sheeting</p> <p><input type="checkbox"/> Tarps and poles</p> <p><input checked="" type="checkbox"/> Trash bags</p> <p><input checked="" type="checkbox"/> Trash cans</p> <p><input checked="" type="checkbox"/> Duct tape</p> <p><input checked="" type="checkbox"/> Paper towels</p> <p><input type="checkbox"/> Folding chairs</p> <p><input type="checkbox"/> Other</p>	<p><b>In the event of an emergency that necessitates evacuation of a work task area or the site, the following procedures will take place.</b></p> <ul style="list-style-type: none"> <li>The Tetra Tech SSC will contact all nearby personnel using the on-site communications to advise the personnel of the emergency.</li> <li>The personnel will proceed along site roads to a safe distance upwind from the hazard source.</li> <li>The personnel will remain in that area until the SSC or an authorized individual provides further instructions.</li> </ul> <p><b>In the event of a severe spill or a leak, site personnel will follow the procedures listed below.</b></p> <ul style="list-style-type: none"> <li>Evacuate the affected area and relocate personnel to an upwind location.</li> <li>Inform the Tetra Tech SSC, a Tetra Tech office, and a site representative immediately.</li> <li>Locate the source of the spill or leak, and stop the flow if it is safe to do so.</li> <li>Begin containment and recovery of spilled or leaked materials.</li> <li>Notify appropriate local, state, and federal agencies.</li> </ul> <p><b>In the event of severe weather, site personnel will follow the procedures listed below.</b></p> <ul style="list-style-type: none"> <li>Site work shall not be conducted during severe weather, including high winds and lightning.</li> <li>In the event of severe weather, stop work, lower any equipment (drill rigs) and evacuate the affected area.</li> <li>Severe weather may cause heat or cold stress. Refer to SWPs 5-15 and 5-16 for information on both.</li> </ul> <p><b>All work-related incidents must be reported. According to TtEMI's reporting procedures, for non-emergency incidents you should:</b></p> <ul style="list-style-type: none"> <li>Notify WorkCare and Incident Intervention at 888.449.7787, or 800.455.6155</li> <li>Notify your Project Manager or Regional Safety Officer (RSO) via phone immediately.</li> <li>Complete a "Tetra Tech Incident Report" (Form IR) within 24 hours and send it to your RSO. If an injury or illness has occurred, the Form IR-A and the WorkCare HIPAA form must be completed at the same time the Form IR is completed.</li> </ul>
<p><b>Equipment Decontamination</b></p> <p>All tools, equipment, and machinery from the Exclusion Zone (hot) or Contamination Reduction Zone (warm) are decontaminated in the CRZ before they are removed to the Support Zone (cold). Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure, cross-contamination, and chemical incompatibilities.</p>		
<p><b>Respirator Decontamination</b></p> <p>Respirators are decontaminated in compliance with SWP 5-27 and should be included with this HASP.</p>		
<p><b>Waste Handling for Decontamination</b></p> <p>Procedures for decontamination waste disposal meet all applicable local, state, and federal regulations.</p>		

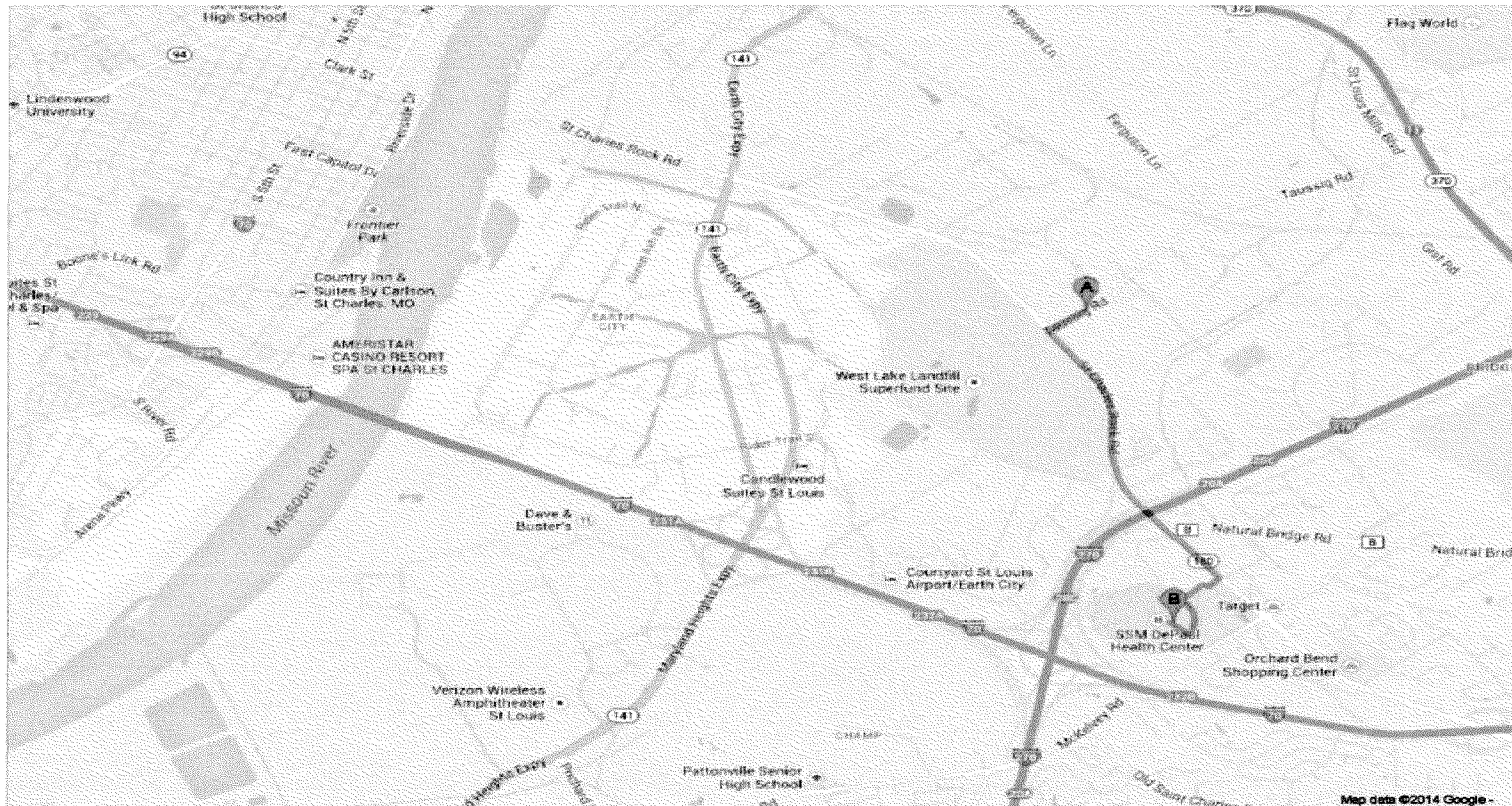
Site Map (May be drawn after crews arrive onsite or inserted using aerial photographs, site figures, etc.):

Note: A dry-run should be conducted to establish a physical location associated with the map provided in the HASP. Verbal verification from the hospital emergency room should also be obtained to ensure that the hospital will accept chemically contaminated patients.

Taussig Rd to 12303 De Paul Dr, Bridgeton, MO 63044 - Google... <https://maps.google.com/maps?saddr=earth city missouri&daddr..>

Google

To see all the details that are visible on the screen, use the "Print" link next to the map.



**Bridgeton, MO 63044**

### APPROVAL AND SIGN-OFF FORM

**Project No.:** X9025.14.0058.000

*I have read, understood, and agree with the information set forth in this Health and Safety Plan and will follow the direction of the Site Safety Coordinator (SSC) as well as procedures and guidelines established in the Tetra Tech, Inc., Health and Safety Manual. I understand the training and medical requirements for conducting field work and have met these requirements.*

*Tetra Tech has prepared this plan solely for the purpose of the health and safety protection of Tetra Tech employees. Subcontractors, visitors, and others at the site, while required to read and follow the provisions outlined in this plan at a minimum, should refer to their safety program for specific information related to their health and safety protection.*

Name	Company / Agency / Organization	Signature	Date

*I have read, understood, and agree with the information set forth in this Health and Safety Plan and comply with and will enforce this HASP, as well as procedures and guidelines established in the Tetra Tech, Inc., Health and Safety Manual.*

Name	Project-Specific Position	Signature	Date
David Kinroth	Project Manager		
	Field Team Leader		
	Site Safety Coordinator		
	Subcontractor SSC		

*Tetra Tech has prepared this plan solely for the purpose of the health and safety protection of Tetra Tech employees. Subcontractors, visitors, and others at the site, while required to read, acknowledge and follow the provisions outlined in this plan at a minimum, should refer to their safety program for specific information related to health and safety.*

**Note: Use Additional sheets as necessary to ensure that all personnel sign and affirm this document.**

**Emergency Contacts**

**WorkCare** - For issues requiring an Occupational Health Physician; assistance is available 24 hours per day, 7 days per week.

**InfoTrac** - For issues related to incidents involving the transportation of hazardous chemicals; this hotline provides accident assistance 24 hours per day, 7 days per week

**U.S. Coast Guard National Response Center** - For issues related to spill containment, cleanup, and damage assessment; this hotline will direct spill information to the appropriate state or region

**Poison Control Center** – For known or suspected poisoning.

**Limitations:****The Level-Two HASP is not appropriate in some cases:**

- Projects involving unexploded ordnance (UXO), radiation sources as the primary hazard, or known chemical/biological weapons site must employ the Level 3 HASP
- Projects of duration longer than 90 days may need a Level 3 HASP (consult your RSO)

**Decontamination:**

**Decontamination Solutions for Chemical and Biological Warfare Agents<sup>a</sup>:** PPE and equipment can be decontaminated using 0.5 percent bleach (1 gallon laundry bleach to 9 gallons water) for biological agents (15 minutes of contact time for anthrax spores; 3 minutes for others) followed by water rinse for chemical and biological agents. In the absence of bleach, dry powders such as soap detergents, earth, and flour can be used. The powders should be applied and then wiped off using wet tissue paper. Finally, water and water/soap solutions can be used to physically remove or dilute chemical and biological agents. Do not use bleach solution on bare skin; use soap and water instead. Protect decontamination workers from exposure to bleach.

**Decontamination for Radiological and Other Chemicals:** Primary decontamination should use Alconox and water unless otherwise specified in chemical specific information resources. The effectiveness of radiation decontamination should be checked using a radiation survey instrument. Decontamination procedures should be repeated until the radiation meter reads less than 100 counts per minute over a 100-square-centimeter area when the probe is held 1 centimeter from the surface and moving slower than 2.5 centimeters per second.

**Decontamination Corridor:** The decontamination setup can be adjusted to meet the needs of the situation. The decontamination procedures can be altered to meet the needs of the specific situation when compound- and site-specific information is available.

**Decontamination Waste:** All disposable equipment, clothing, and decontamination solutions will be double-bagged or containerized in an acceptable manner and disposed of with investigation-derived waste.

**Decontamination Personnel:** Decontamination personnel should dress in the same level of PPE or one level below the entry team PPE level.

**All investigation-derived waste should be left on site with the permission of the property owner and the EPA on-scene coordinator.** In some instances, another contractor will dispose of decontamination waste and investigation-derived waste. DO NOT place waste in regular trash. DO NOT dispose of waste until proper procedures are established.

**Notes:**

<sup>a</sup> Source: Jane's Information Group. 2002. *Jane's Chem-Bio Handbook*. Page 39.



**TETRA TECH, INC.**  
**DAILY TAILGATE SAFETY MEETING FORM**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Project No.: \_\_\_\_\_

Client: \_\_\_\_\_ Site Location: \_\_\_\_\_

Site Activities Planned for Today: \_\_\_\_\_

Weather Conditions: \_\_\_\_\_

<b>Safety Topics Discussed</b>	
<b>Protective clothing and equipment:</b>	
<b>Chemical and physical hazards:</b>	
<b>Emergency procedures:</b>	
<b>Equipment hazards:</b>	
<b>Other:</b>	
<b>Attendees</b>	
Printed Name	Signature

**Meeting Conducted by:**

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature



**TETRA TECH EM INC.**  
**HEALTH AND SAFETY PLAN AMENDMENT**

**Site Name:** \_\_\_\_\_

**Amendment Date:** \_\_\_\_\_

**Purpose or Reason for Amendment:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Required Additional Safe Work Practices or Activity Hazard Analyses:** \_\_\_\_\_

\_\_\_\_\_

**Required Changes in PPE:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Action Level Changes:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**AMENDMENT APPROVAL**

<b>RSO or Designee</b>	_____	_____	_____
	Name	Signature	Date

<b>Site Safety Coordinator</b>	_____	_____	_____
	Name	Signature	Date

**Date presented during daily site safety meeting:** \_\_\_\_\_





**TETRA TECH, INC.**  
**FIELD AUDIT CHECKLIST**

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Field Location: \_\_\_\_\_ Completed by: \_\_\_\_\_

Project Manager: \_\_\_\_\_ Site Safety Coordinator: \_\_\_\_\_

General Items		In Compliance?		
Health and Safety Plan Requirements		Yes	No	NA
1	Approved health and safety plan (HASP) on site or available			
2	Names of on-site personnel recorded in field logbook or daily log			
3	HASP compliance agreement form signed by all on-site personnel			
4	Material Safety Data Sheets on site or available			
5	Designated site safety coordinator physically present on jobsite			
6	Daily tailgate safety meetings conducted and documented on Form HST-2			
7	Documentation available proving compliance with HASP requirements for medical examinations, fit testing, and training (including subcontractors)			
8	HASP onsite matches scope of work being conducted			
9	Emergency evacuation plan in place and hospital located			
10	Exclusion, decontamination, and support zones delineated and enforced			
11	HASP attachments present onsite (VPP sheet, audit checklist, AHA, etc.)			
12	Illness and injury prevention program reports completed (California only)			
Emergency Planning				
13	Emergency telephone numbers posted			
14	Emergency route to hospital posted			
15	Local emergency providers notified of site activities			
16	Adequate safety equipment inventory available			
17	First aid provider and supplies available			
18	Eyewash solution available when corrosive chemicals are present			
Air Monitoring				
19	Monitoring equipment specified in HASP available and in working order			
20	Monitoring equipment calibrated and calibration records available			
21	Personnel know how to operate monitoring equipment and equipment manuals available on site			
22	Environmental and personnel monitoring performed as specified in HASP			

Safety Items		In Compliance?		
Personal Protection		Yes	No	NA
23	Splash suit, if required			
24	Chemical protective clothing, if required			
25	Safety glasses or goggles (always required)			
26	Gloves, if required			
27	Overboots, if required			
28	Hard hat (always required)			
29	High visibility vest, if required			
30	Hearing protection, if required			
31	Full-face respirator, if required			
Instrumentation				
32	Combustible gas meter and calibration notes			
33	Oxygen meter and calibration notes			
34	Organic vapor analyzer and calibration notes			
Supplies				
35	Decontamination equipment and supplies			
35	Fire extinguishers			
37	Spill cleanup supplies			
Corrective Action Taken During Audit:				

Note: NA = Not applicable

\_\_\_\_\_  
Auditor's Signature

\_\_\_\_\_  
Site Safety Coordinator's Signature

\_\_\_\_\_  
Date

**ACTIVITY HAZARD ANALYSIS (AHA)**

Tetra Tech EM Inc.

**Ambient Outdoor Air Monitoring****Task Description**

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

START will provide support to EPA Region 7 implementing an air monitoring plan to sample for landfill constituents prior to the isolation barrier installation around the Westlake landfill. The plan is to document background conditions off the site prior to construction activities and during construction activities to determine if any releases are occurring above health based benchmarks. The monitoring will be conducted until the barrier installation is completed.

Hazards		Actions
Task Steps	Potential Hazards	Critical Safety Procedures and Controls
Setup/maintain/access monitoring stations (ground level stations)	Vehicular traffic	Field personnel will wear orange safety vests.
	Slips, trips, falls	Field personnel will wear steel-toed boots with good tread.
Setup/maintain/access monitoring stations (roof mounted stations)	Falls	One roof-top location is anticipated. The roof area was observed during an initial site visit and a permanent 4-foot tall barrier enclosed the portion of the roof that will be accessed. Field personnel will stay within the barrier so that there is not risk of falling.
<b>Equipment to be Used</b> No special safety instruments/equipment is required (PPE only)	Inspection Requirements NA	Training Requirements NA

**Assessed By**

Name

Signature

Date

**Approved By**

10/08

Name

Signature

Date